**Hypopituitarism**

From WikiLectures

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**Definition of Hypopituitarism**

Hypopituitarism is an abnormal condition caused by diminished activity of the pituitary gland resulting in decreased secretion of its hormones. Symptoms vary depending on which hormones are affected. The manifestations depend on the hormone(s) and target tissues involved. Serum levels of pituitary hormones are lower than normal.

Presenting symptoms can be nausea, vomiting, anorexia, fatigue, weakness, hypoglycemia, loss of body hair in women, decreased libido, cold intolerance, dryness of skin, mild myxedema, lethargy, decreased metabolic rate, amenorrhea and in women of reproductive age and with atrophic changes in the vagina, uterus, and breasts in women of reproductive age. In postpubertal males, atrophy of the testes and decreased beard growth occur, decreased libido and body hair in both men and women, in children, growth failure, dwarfism, and hypoglycemia. In adults, increased body fat, decreased muscle bulk and strength, reduced sweating, dry skin, and psychological problems, including depression, social withdrawal, fatigue, loss of motivation and a diminished feeling of well-being, osteoporosis, and reduced lean body mass.

**Pathophysiology**

In panhypopituitarism, all hormones are deficient and the individual suffers from multiple complications including cortisol deficiency from lack of adrenocorticotrophic hormone (ACTH), thyroid deficiency from lack of thyroid-stimulating hormone (TSH), and loss of secondary sex characteristics from lack of FSH and LH. Low levels of growth hormone (GH) and insulin-like growth factor 1 (IGF-1) affect growth in children and can cause physiologic and psychologic symptoms in adults. Postpartum women cannot lactate because of decreased or absent prolactin. GH deficiency may result from any of the causes of hypopituitarism, may be genetic or the result of tumors, e.g. craniopharyngiomas. In children, GH deficiency in hypoglycemia is likely attributable to impaired substrate mobilization for gluconeogenesis and enhanced insulin sensitivity. A decline in GH production is an unavoidable consequence of aging.

**Genetics**

Several genetic defects have been identified in the GH axis that account for impaired GH action. These include a recessive mutation in the GHRH gene, resulting in a failure of GH secretion, and mutations that cause GH insensitivity by affecting the GH receptor, insulin-like growth factor 1 (IGF-1) biosynthesis, IGF-1 receptors, or defects in GH signal transduction. GH deficiency in children is manifested by growth failure, dwarfism and fasting hypoglycemia, likely attributable to impaired substrate mobilization for gluconeogenesis and enhanced insulin sensitivity.

**Epidemiology**

Hypopituitarism is relatively rare, with a prevalence of 45 cases per 100,000 and an incidence of about 4 cases per 100,000 per year in the normal population.

**Disease described**

Presenting symptoms can be:

* due to ACTH deficiency - Nausea, vomiting, anorexia, fatigue, weakness, hypoglycemia, loss of body hair in women, decreased libido.
* due to TSH deficiency – cold intolerance, dryness of skin, mild myxedema, lethargy, and decreased metabolic rate.
* due to FSH and LH deficiencies – amenorrhea and in women of reproductive age and with atrophic changes in the vagina, uterus, and breasts in women of reproductive age. In postpubertal males, atrophy of the testes and decreased beard growth occur, decreased libido and body hair in both men and women.
* GH deficiency in children is manifested by - growth failure, dwarfism, and hypoglycemia. In adults, symptoms of chronic adult GH deficiency syndrome are increased body fat, decreased muscle bulk and strength, reduced sweating, dry skin, and psychological problems, including depression, social withdrawal, fatigue, loss of motivation and a diminished feeling of well-being and osteoporosis and reduced lean body mass.

**Sign and Symptoms**

Hypopituitarism may be the result of inherited disorders, but more often it's acquired.

Hypopituitarism frequently is triggered by a tumor of the pituitary gland. As a pituitary tumor increases in size, it can compress and damage pituitary tissue, interfering with hormone production. A tumor can also compress the optic nerves, causing visual disturbances.

The cause of hypopituitarism can also be other diseases and events that damage the pituitary, such as:

•Head injuries

•Brain or pituitary tumors

•Brain surgery

•Radiation treatment

•Autoimmune inflammation (hypophysitis)

•Stroke

•Infections of the brain, such as meningitis

•Tuberculosis

•Infiltrative diseases, such as sarcoidosis, which is an inflammatory disease occurring in various organs; histiocytosis X, in which abnormal cells cause scarring in numerous parts of the body, such as the lungs and bones; and hemochromatosis, which causes excess iron deposition in the liver and other tissues

•Severe loss of blood during childbirth, which may cause damage to the front part of the pituitary gland (Sheehan syndrome or postpartum pituitary necrosis)

•Genetic mutations resulting in impaired pituitary hormone production

Diseases of the hypothalamus, a portion of the brain situated just above the pituitary, also can cause hypopituitarism. The hypothalamus produces hormones of its own that directly affect the activity of the pituitary.

In some cases, the cause of hypopituitarism is unknown.

**Diagnosis**

* Use diagnostic evaluation together with the person’s signs and symptoms
* Measure the tropic hormones from the pituitary and target endocrine glands
* In some cases, testing of the various axis is indicated
* Radiographic assessment of the pituitary or
* Magnetic resonance imaging MRI or
* Computed tomography CT scan may demonstrate enlargement of the pituitary, show abnormal areas of enhancement suggestive of an adenoma, or locally aggressive tumor

**Treatment**

* Treatment involves replacing target gland hormone(s) that are deficient.
* Immediate therapy with glucocorticoids and intravenous fluids in cases of circulatory collapse
* Thyroid and cortisol replacement therapy maintained
* Gender-specific sex steroid replacement therapy initiated for general well-being and prevent osteoporosis
* Recombinant human GH (rhGH) is used for treatment of GH deficiency in children results in improved stature and metabolism
* Treatment of adult GH deficiency improves quality of life, metabolism, body composition and physical performance in some people.
* Treatment in use of GH to treat healthy aging is more controversial.

**Current Articles**

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**Submitted by Helen Lewis, CSU-Pueblo Nursing Graduate Student**

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